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Bruno Christensen

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EXAMINER

DIAZ, THOMAS C

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,511	Applicant(s) CHRISTENSEN ET AL.	
	Examiner THOMAS DIAZ	Art Unit 3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 9 is objected to because of the following informalities: Claim 9 recites "a longitudinally movable element) with two". The symbol ")" appears to be a typo. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whittingham (US patent 4635904) in view of McKibbin (USP 5472383).

Regarding claim 1,

Applicant claims a linear actuator (fig. 1,10; Examiner notes prior art is a jack which has the same structure as the claimed actuator and function ns as a linear actuator) comprising:

- A cabinet (fig.1, 22 or 24) having

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- A reversible electric motor (fig. 2, 60 and col.6, lines 24-25; Examiner notes an electric motor is clearly capable of being reversible by switching the current) with a motor shaft (fig.2, 62),
- A reduction gear (fig.2, 64,66,76; which is multiple stages), where a first stage (fig.2, 62 to 64) is connected with the motor shaft as seen in fig.2,
- A spindle (fig.2, 88) whose one end is connected with an output side on the last stage of in the reduction gear (fig.2, 76) and the other end indicates the front of the actuator,
- A spindle nut (fig.2, 114; Examiner notes, prior art calls this a ball follower since its a ball screw) secured against rotation and translates linearly along the spindle (col.6, lines 13-15),
- A rear mount (fig.1, 14 and 20)
- An ball and ratchet overload clutch (fig.2, 82, and col.6, lines 56-58) wherein the overload clutch is connected to one of the first stages in the reduction gear (fig.2; connected to gears 76,66,64).

Whittingham fails to disclose said first stage comprising a planetary gear and an extended end of the motor shaft is configured as a sun wheel having an orbital wheel.

McKibbin teaches the use of a planetary gear (fig.1, 6) and an extended end of the motor shaft is configured as a sun wheel (fig.1, 8) having an orbital wheel (fig.1, 20) for the predictable and well-known purpose of providing a reduction drive between the motor shaft and a driven wheel.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the use of a planetary gear (fig.1, 6), as taught by McKibbin, in the actuator disclosed by Whittingham for the predictable and well-known purpose of providing a reduction drive between the motor shaft and a driven wheel. The additional gear reduction would add more possible gear ratios in the actuator disclosed by Whittingham.

Regarding claim 7,

Whittingham discloses a guide profile (fig.2, 26) is attached to end of the cabinet and is also attached to the cabinet with two claws (fig.7, 34, 40, the pins 34 and 40 act as claws to attach the guide profile to the cabinet) which grip the outside of the guide profile.

3. Claims 2-4, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whittingham (US patent 4635904) in view of McKibbin (USP 5472383), as applied to claim 1, and further in view of Alfano (USP 6259175)

Regarding claim 2,

Whittingham fails to a clutch assembly with the same claimed structure as claim

2.

Alfano et al. teaches a linear actuator having a similar clutch system (fig.9) to the applicant's claimed invention for the purpose of limiting the amount of torque that can be transmitted from the motor to the screw assembly (see abstract) comprising:

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- a ring with holes (fig.9, 83, The gear has hole for the balls and the clutch plates.)
- a first plate (fig.9, 85) with depressions (fig.9, 85a) that engage the balls (fig.9, 87) and is firmly connected to the transmission from the motor (fig.9, the gear 83 is connected to the transmission of the motor),
- a second plate with depressions that engage another side of the balls (fig.9, 86 and 86a),
- a spring mounted against the ceiling in a cap (fig.9, springs 90-92 mounted against the ceiling of a cap 94. Examiner takes the position that retaining ring 94 acts as a cap on the spring because it covers it.),
- wherein the cap is secured indirectly to the first plate member (seen in fig.9, the cap is secured to the first plate member the other members of the clutch assembly), and

wherein the ring with the balls is connected with the further transmission to the spindle (fig.9, gear 83 being part of the transmission and a spindle (fig.9, 81) is connected to the gear 83.) for the purpose of providing a torque limiting device to control the amount of torque transmitted to the driven shaft.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the clutch assembly taught by Alfano et al. with the clutch of Whittingham for the purpose of providing improved torque limiting device to control the amount of torque transmitted to the driven shaft.

Regarding claim 3,

Whittingham discloses the clutch being connected to a shaft member (fig.2, 88) with a gear wheel (fig.2, 76) as a transition to subsequent stages in the gearing in the spindle (fig.2, gear wheel 76 is connected to the rest of the reduction gearing and transmits power to the spindle 112).

Regarding claim 4,

Whittingham discloses a shaft member being connected with a brake device. Examiner takes the position that the spindle described above is a shaft member and it is connected with a brake assembly or device (fig.6, 122).

Regarding claim 8,

Applicant claims an electrical control for the actuator incorporated inside the cabinet which Whittingham fails to teach.

Alfano et al. teaches that printed circuits are included within the housing for the actuator for the purpose of electrical devices such as limit switches used to generate electric signals when the actuator has extended or retracted a certain amount (col.7, lines 26-36).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to add the printed circuits taught by Alfano et al. with the actuator of Whittingham for further control the extent of movement of the actuator electronically.

4. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Whittingham (US patent 4635904) in view of McKibbin (USP 5472383) and in view

of Alfano (USP 6259175), as applied to claim 2 above, and further in view of Akkerman (US patent 5195721).

Applicant claims that the end of a shaft member or an extension thereof is configured to receive a crank through an opening in the cabinet for manual operation of the actuator.

Whittingham fails to teach an actuator configured to be manually operated with a crank.

Akkerman teaches a valve actuator configured with an opening in the housing for a crank (fig.1, 130) in order to provide a way to manually operate the actuator in case the electric motor fails (col. 5, lines 66+, col. 6 lines 1-2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the manual operation mechanism taught by Akkerman with the actuator taught by Whittingham in order to provide a back-up mechanism for operating the actuator in case of motor failure.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Whittingham (US patent 4635904) in view of McKibbin (USP 5472383), as applied to claim 1, and further in view of Abraham (US patent 4712441).

Applicant claims two electrical switches for controlling the end stop positions of the spindle nut, which are activated by a longitudinally movable element with two arms seated in a slot in a housing, said arms having a spring interposed between them whose ends engage a stop in the housing.

Whittingham fails to disclose the switches along with the structure connecting them.

Abraham discloses a linear actuator with a limit switch assembly that has two electrical switches (fig.8 and fig. 9, 210 and 212) which are operated by the shaft (fig.9, 54) which is connected to two arms (fig. 8, 166 and 208, Examiner takes the position that the cams can be considered arms because they can move and they operate the limit switches (col.7, lines 66+ and col.8, line 1)). These arms are seated in a housing (fig.8, 36) and have a spring (fig. 5, 158) interposed between them whose ends engage a stop or push button (fig.5 and fig. 8, 150) which disengages the drive gear if depressed (col. 7, lines 40-44). The limit switch assembly which contains these components is used for controlling the power input to the drive motor (col. 8, lines 1-4).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine switches or limit switch assembly taught by Abraham with the linear actuator taught by Whittingham in order to provide a linear actuator with better power control and therefore better position control.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Whittingham (US patent 4635904) in view of McKibbin (USP 5472383), as applied to claim 7, and further in view of Abraham (US patent 4712441).

Applicant claims a potentiometer constructed as an add-on unit in engagement with down gearing between a clutch and the spindle.

The combination of Whittingham and Alfano et al. fail to teach this potentiometer.

Abraham teaches the use of a potentiometer (fig. 5, 190) for the purpose indicating the position of the drive nut (col.8, lines 39-43). The potentiometer is connected to the reduction gearing (fig. 5, 198).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the potentiometer taught by Abraham with the combination of Whittingham and Alfano et al. in order to provide an electrical signal with the drive nut position to the circuits or control devices being used in controlling the position of the actuator. Furthermore, it would be obvious to provide this potentiometer between a clutch and a spindle since it is connected to the reduction gearing which is already disposed between these components.

Allowable Subject Matter

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 09/23/2008 have been fully considered but they are not persuasive. Regarding claim 1, the claim language only requires the overload clutch to "be arranged **in connection with the first stage or one of the first stages in the**

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reduction gear". It does require the clutch to be directly connected to the first stage as applicant is arguing.

Regarding the argument having 2 clutches in the actuator of Whittingham. To clarify, the clutch taught by Alfano is simply replacing the clutch disclosed by Whittingham.

Regarding claim 3, the ring member which is part of the clutch combined by Alfano would be connected to the shaft member disclosed in the above rejection.

Regarding claim 4, the shaft member is connected to the brake device labeled in the above rejection, even if the connection is not a direct connection.

Regarding claim 7, as broadly recited the rejection above indeed points out the two claws (fig.7, 34, 40, the pins 34 and 40 act as claws to attach the guide profile to the cabinet) which grip the guide profile of the actuator.

Regarding claim 8, an electronic control is very broad and thus the controls mentioned in the rejection read on the claim.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Prior art relates to similar actuators and torque limiting devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS DIAZ whose telephone number is (571)270-5461. The examiner can normally be reached on Monday-Friday 8:30am to 5:30pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Thomas Diaz/
Examiner, Art Unit 3656

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656